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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,750	03/18/2004	Bryan C. Hendrix	ATMI-696	6889
25559	7590	06/29/2006	EXAMINER	
ATMI, INC. 7 COMMERCE DRIVE DANBURY, CT 06810			FULLER, ERIC B	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 06/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/803,750	Applicant(s) HENDRIX ET AL.	
	Examiner Eric B. Fuller	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-96 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-96 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-16, 20-43, and 47-64 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Wade et al. (US 6,440,495 B1).

Wade teaches a method of forming a Ru film on a titanium nitride by CVD (column 4, line 59 - column 5, line 13). A Ru oxide seed layer is deposited by CVD prior to the bulk layer (column 5, lines 14-37). The examples and tables anticipate all the process conditions claimed by the applicant, including precursors, solvents, co-reactants, temperatures, growth rates, resistance, delivery methods, and pressures.

Claims 65-84 and 88-96 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Jin et al. (US 6,479,100 B2).

Jin teaches a method of forming a Ru film on a titanium nitride by depositing a Ru oxide seed layer followed by an annealing step that removes the oxygen content from the film and the process is repeated to deposit subsequent layers (column 4, lines 14-44). The examples anticipate all the process conditions claimed by the applicant, including precursors, solvents, co-reactants, temperatures, growth rates, resistance,

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delivery methods, and pressures.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-19 and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wade et al. (US 6,440,495 B1) in view of Aaltonen et al. (US 2003/0165615 A1).

Wade teaches the limitations above, but does not explicitly teach $\text{Ru}(\text{thd})_3$ as a precursor. However, Aaltonen teaches that the art recognized suitability of using $\text{Ru}(\text{thd})_3$ as the precursor. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use $\text{Ru}(\text{thd})_3$ as the precursor in Wade. By doing so, one would have a reasonable expectation of success, as Aaltonen teaches the recognized suitability of doing such.

Claims 85-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin et al. (US 6,479,100 B2) in view of Aaltonen et al. (US 2003/0165615 A1).

Jin teaches the limitations above, but does not explicitly teach $\text{Ru}(\text{thd})_3$ as a precursor. However, Aaltonen teaches that the art recognized suitability of using $\text{Ru}(\text{thd})_3$ as the precursor. It would have been obvious at the time the invention was

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made to a person having ordinary skill in the art to use $\text{Ru}(\text{thd})_3$ as the precursor in Jin. By doing so, one would have a reasonable expectation of success, as Aaltonen teaches the recognized suitability of doing such.

Conclusion

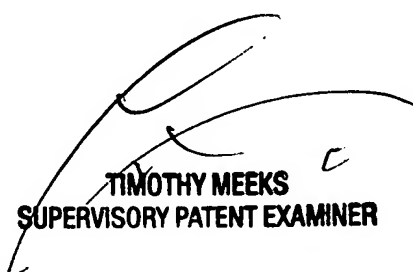
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks, can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



EBF



TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER